

ID	Parameter	Sub-Parameter List	Work Teams
BIOTA			
1	Alga	Community survey, assessment	Benthic Invertebrates, Sac. WQ
2	Birds	abundance; sel. Riparian spp.; distribution; reproduction; spp. migrants; genetic diversity; percent breeding species; reproductive success; percent richness/diversity; percent breeding species; reproductive success; percent	Fluvial geomorphology, Shallow Water Habitats
3	Contaminants-Tissue	birds-Ocs, Hg, Se, in eggs/reproduction; fish-bioaccumulation of metals, trace elements, organics, Hg, PCB's, chlorinated insecticides, bioassessment surveys, exposure effects; invertebrate-bivalves-bioaccumulation of metals, trace elements, organics, exposure effects; invertebrates-bioassessment	Sac. WQ, SJ WQ
4	Delta Smelt	adult, juvenile, larval, spawning	Delta Smelt
5	Fish	Community survey; condition indices; diet; feeding success; distribution & abundance; health; growth rate; relative abundance; fish ladder; 4 life stages; screen sampling at CVP and SWP; lamprey spawning; introduced species; flux; secondary production; reproductive success; biomass	Bay-Delta productivity, WQ-Contaminants, SJ WQ, Resident fish, Steelhead, Fluvial Geomorphology, Fish X2; Hydrodynamics, Shallow Water Habitats
6	Introduced Species	Introduced species; percent exotic species	Shallow Water Habitats
7	Invertebrates	benthic fauna, biomass, size distribution, dominant species, composition and abundance; mysid abundance; macroinvertebrate production, community analysis, condition indices; terrestrial invertebrate abundance; secondary production	Salmon, Benthic Invertebrates, WQ-Contaminants, Fish X2, System Productivity, Shallow Water Habitats
8	Microbial	communities; production	System Productivity, Fish X2
9	Phytoplankton	biomass; exposure effects; primary productivity; species composition;	System Productivity, WQ-Contaminants, Shallow Water Habitats
10	Salmon & Steelhead	escapement surveys; carcass surveys; delay in migration; outmigration surveys; trap efficiency; fry emigration; juvenile trawling; population density & emigration; stranding rates of juveniles; juvenile distribution, growth & lipid storage, maturity at outmigration, outmigration timing, survival; ocean harvest; ocean prey abundance; straying; pre-spawning mortality; percent hatchery fish in escapement; redd distribution & superimposition; redd stranding rates & spawning disruption; egg viability; running time; age composition; smolt survival; smoltification timing; dietary analysis; adult scale otolith production & analysis-adult & juvenile; steelhead/rainbow trout allelic testing; angler survey; distribution and emigration timing; post-spawning adult steelhead; steelhead hatchery marking; steelhead/rainbow trout life stage ranking; spawning escapement;	Salmon, Steelhead

11	Terrestrial & Aquatic Species	trophic structure; mitigation for levee improvements; occurence by habitat; harvest of wild & introduced species; distribution & abundance; individual morphometry; species distribution & abundance for plants, small mammals, fish, invertebrates, birds; percent exotic species; genetic diversity for mammals	Delta Levees, Watershed Management; Shallow Water Habitats
12	Vegetation	bioassessment; cover; productivity; biomass; riparian structure, growth, productivity, stand attributes, tree size distribution, population dynamics, upland land cover and structure; vegetation changes after flooding;	Watershed Management, Fluvial Geomorphology, SJ WQ, Steelhead
13	Zooplankton	Abundance; exposure effects; community; species abundance; biomass; size composition; secondary production; flux	System Productivity, Fish X2, WQ-Contaminants, Salmon, Hydrodynamics
GEOMORPHOLOGY			
14	Aquifers	boundary delineation & compaction; regional and local mapping of hydrogeologic boundaries; thickness and degree of confinement	water transfers
15	Channel	bathymetric surveys; structural complexity; channel & bank stability & erosive resistance; channel incision in meadows & swales; morphology & migration; substrate complexity; geometry; habitat delineation; areal extent; channel changes after flooding; cross-sectional profile; longitudinal profile; channel density; network order;	Benthic invertebrates, Salmon, Hydrodynamics, Watershed Management, Delta Levees, Steelhead, Shallow Water Habitats
16	Land	subsidence; land surface altitude; topographic/geologic characterization;	Water Transfers; Delta Levees; Watershed Management; Fluvial Geomorphology
17	Levees	identification of vulnerable zone; assessment of restoration efforts; mapping of ground-shaking	Delta Levees
18	Sediment	composition; grain size; particle size distribution; deposition/mobilization dynamics; floodplain, bank, channel deposits; organic sediments; Contaminants (Se, organochlorines, resuspension mercury); toxicity; trace elements & metals; ionized ammonia, total sulfides, total organic carbon, total nitrogen; suspended sediment bedload & solute load; substrate permeability; resuspension; sediment production background rates; sediment pH; flux; bioturbation depth; depth of detritus; redox potential; bulk density; chemistry	System productivity, Fluvial Geomorphology, Hydrodynamics, Watershed Management, WQ-Contaminants, Salmon, SJ WQ, Sac. WQ, Shallow Water Habitats
19	Seismic	ground motions in the delta; source characterization	Delta Levees
20	Soils	peat & organic gradation, oxidation, organic matter content, moisture content, void ratio, compressability, vertical and horizontal extent; stability and erosive resistance;	Delta Levees, Watershed Management

ENERGETICS/NUTRIENT CYCLING			
21	Energetics/nutrient Cycling	Carbon pools; dynamics; fixation; detritus composition, transport; organic carbon input	Fish X2, Watershed Management
HABITAT			
22	Habitat	channel morphology; river habitat vs. fish assemblage; floodplain inundation; fish habitat availability and micro-habitat usage below dams; spatial extent and configuration; compensatory mitigation for levee improvement including mitigation banking; salmon spawning restoration projects; salmon spawning sediment substrate sampling; vegetation- horizontal cover and vertical structure; canopy cover; riparian forest width, height, density; riparian habitat delineation & areal extent; areal extent of wetlands and seasonally wet environments; detritus & debris; total shoreline length, horizontal accretion & erosion; patch temporal variability; shoreline development; patch classification, size frequency, diversity	Steelhead; Fluvial Geomorphology, Watershed Management, Delta Levees, Salmon, Benthic Invertebrates, Shallow Water Habitats
HUMAN WELFARE			
23	Agriculture	Number and size of farms; value of agricultural output; agricultural employment; labor force and unemployment; social and economic values related to agricultural practices	Water Transfers, Watershed Management
24	Flood	Flood fighting support;	Delta Levees
25	Health	risk assessment for Hg, Se; Mitigation of Se inputs into ducks, crabs & fish;	WQ-Contaminants
26	Water Transfer Effects	income; rural businesses sales and employment; social & economic values related to community involvement, watershed management, water use practices, recreation, habitat extent & species diversity; water transfer history & third party effects	Water Transfers, Watershed Management
HYDROLOGY			
27	Bay-Delta Hydrodynamics	3D-Hydrodynamic Model; bottom salinity/temperature axis of north channel; delta water export rates; historical bay-delta hydrodynamics studies; horizontal current patterns; ocean currents; sea level rise; shallow water hydrology; tidal prism conservation; hydroperiod; tidal regime; tidal prism; water depth; wetted area;	Hydrodynamics, Salmon, Delta Levees, Shallow Water Habitats
28	Flow	flooding regime; daily flow; depth; diversions & withdrawals; export rates; episodic rates; installation & removal of barriers; flow gate operation; inflow rate; net tidally averaged; peak flows; pulsing; river time series; stage (height); discharge; velocity; velocity profiles; vertical hydrolic gradient; tidal time series flow; runoff; evaporation; infiltration; flood frequency; channel tidal flows, velocity & stage; changes due to setback levees, net infiltration	Delta Levees, Watershed Management, WQ Contaminants, SJ WQ, Hydrodynamics, Fluvial Geomorphology, System Productivity, Salmon, Water Transfers, Benthic Invertebrates, Sac. WQ,

29	Groundwater	discharge & recharge; levels; movement; water quality; sources; wetland storage & streambank storage;	Delta Levees, Watershed Management, Fluvial Geomorphology, Water Transfers,
30	Reservoirs	surface water; storage; water quality; temperature	Water Transfers, Watershed Management
31	Suspended Sediment	delivery & types to impoundments; inflow into delta; within delta;	Hydrodynamics, Watershed Management
32	Water Deliveries	surface water;	Water Transfers
33	Water-Chemistry	alkalinity; conductivity; dissolved oxygen; hardness; major ions; nutrients; nutrients-organics; organic carbon/BOD; salinity; solutes; total organic carbon; strontium in steelhead spawning streams;	SJ WQ, Benthic Invertebrates, Sac WQ, Fluvial Geomorphology, Resident Fish, System Productivity, Salmon, Fish X2, Watershed Management, Water Transfers, Steelhead
34	Water-Contaminants	ambient surface water for pesticides; aquatic toxicity; bromides; contaminant transport; dissolved and total organics; dissolved and total trace elements/metals; mercury including methyl-mercury; organochlorines; pathogens; impacts due to dredging; THMFP; toxicity to invertebrates, alga, & fish; undissociated ammonia levels	WQ Contaminants, SJ WQ, Sac WQ, Delta Levees, Watershed Management, salmon
35	Water-physical	light attenuation; total dissolved solids; total suspended solids; turbidity; temperature	System Productivity, Water Transfers, Sac. WQ, Benthic Invertebrates, Fluvial Geomorphology, Resident Fish, Watershed Management, SJ WQ, Hydrodynamics, Steelhead, Salmon

LAND USE & RESOURCE MANAGEMENT

36	Agriculture	land use/acreage by irrigation methods; irrigation amounts & efficiency; CIMIS; crop patterns; environmental & third party impacts of water transfers; real time Eto; EWMP implementation; grazing & management practices; length of canals & laterals; pesticide management effectiveness; reduction in applied water, groundwater depletion; surface & subsurface drainage; delta land use, soils, water use surveys;	Water use efficiency, Watershed Management, Water transfers, WQ Contaminants,
37	Levees & Impoundments	impoundments; levee cross-sections; levee maintenance quality inspections; levee profiles; ground failure mapping;	Delta levees, Watershed Management'
38	population /demographics	population; population within water service area boundaries; income	Water use efficiency, Water transfers
39	Urban	Applied water reduction; BMPs; commercial, industrial, & institutional customer data; Eto data for surveyed landscapes and applied water; reduction in groundwater depletion; interior water use; irrigated landscape acreage surveys; urbanization; water management plans; water use per capita data by customer class, water district, hydrologic region; water use efficiency estimates;	Water use efficiency, Watershed Management

40	Water Recycling & wastewater	amount produced & used in supplier service area, individual water reclamation projects, local water recycling projects; quality of source water & resulting recycled water; quantity of wastewater collected & treated; recycled wastewater use benefits; wastewater discharge; nutrient loading from sewage, cannery effluent, urban runoff, dairy farms; mercury NPDES discharges	Salmon, Water Use Efficiency, WQ Contaminants
41	Land use	Land use vs water quality; human activities near streams & riparian areas; logging & practices; mining; point sources of sediments & contaminants; recreational land use; presence & type of activity by habitats; roads & road-building; watershed improvement practice; wildfire & fire suppression; land management practices; personnel turn over; landuse history; land use intensity; funding;	Fluvial Geomorphology, Water Transfers, Watershed Management, Shallow Water Habitats
METEOROLOGY			
42	Air	mercury deposition; organochlorine source loading; relative humidity; temperature; wind speed & direction	WQ Contaminants, System Productivity
43	Precipitation	amount, timing & form; snow-pack & snow-melt dynamics, sunlight	System Productivity, Watershed Management